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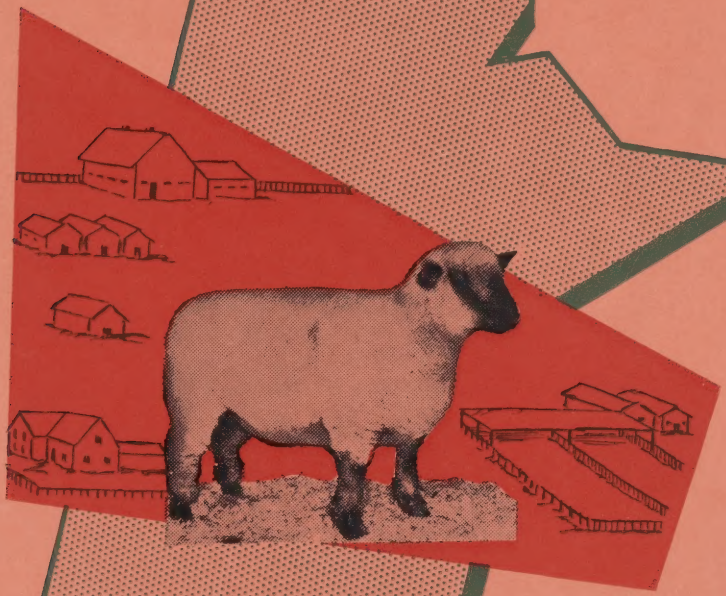
SHEEP In Manitoba



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Sheep in Manitoba

by

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LIVESTOCK BRANCH

Manitoba Department of Agriculture & Conservation
Winnipeg, Manitoba

BY AUTHORITY OF HON. GEO. HUTTON
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Table of Contents

WHY NOT MORE SHEEP ON MANITOBA FARMS 5

GOOD BREEDING STOCK — THE PRIME REQUISITE 6
- Breeding systems 6
- Selecting the flock ram 8
- Selection in the ewe flock 8
- Determination of a sheep's age by its teeth 9

BREEDS OF SHEEP AND THEIR USE ON MANITOBA FARMS 10

PLENTY OF GOOD FEED IS ALWAYS IMPORTANT 18
- Pasture for sheep 19
- Temporary and fall pastures 19
- Mineral requirements 20
- Provide plenty of clean water 20
- Winter feeding of the flock 20
- Concentrates 22
- Rations for bred ewes 22
- Creep-feeding lambs 23
- Rations for rams 24

"SHEEP SENSE" AND GOOD MANAGEMENT WILL PAY OFF 24
- Care at breeding time 24
- Should ewe lambs be bred? 25
- Time to breed 25
- Management of the ram 26
- Care of the bred ewes 27
- Care at lambing time 27
- Handling of orphan and disowned lambs 29
- Lamb identification 30
- Docking 31
- Castration 32
- Summer care of the flock 33
- Catching and handling sheep 34
- Trimming a sheep for show 35

LAMB MARKETING 37
- Feeding and care of lambs 38
- Classifications and carcass grades of lambs 38

SHEARING AND WOOL PREPARATION 39
- Wool preparation 41
- Wool grading 42

PARASITE CONTROL 43
- Internal parasites 43
- External parasites 46

SOME COMMON AILMENTS OF SHEEP 48

A STITCH IN TIME SAVES NINE 56

WHY NOT MORE SHEEP ON MANITOBA FARMS?

There is probably no other form of livestock production which is as profitable as a well managed sheep enterprise. Even in the leanest year a flock in December will give a gross annual return of at least 75 per cent of its January 1st value. Except for fencing, the outlay in buildings and equipment is low. Expensive buildings and a large capital investment are not essential in establishing a profitable farm flock. The labor requirements in managing a flock are not high. Sheep fit quite easily into a mixed farming operation since the peak periods of labor requirement come at periods of the year when labor is more readily available.

Sheep production is not, and never has been, a major enterprise in Manitoba. Sheep have been, too often, a secondary operation and not a primary source of income on the farm. They therefore received little attention from the operator. When a problem arose, the farmer, rather than looking for a solution, frequently disposed of the sheep in order to rid himself of the problem.

Many consider sheep to be scavengers, that is, their value lies in their ability to control weeds and to utilize waste acreages. To a certain extent this is true, but it has been overemphasized with the result that profits have been considerably lower than what might have been possible had good pasture been provided.

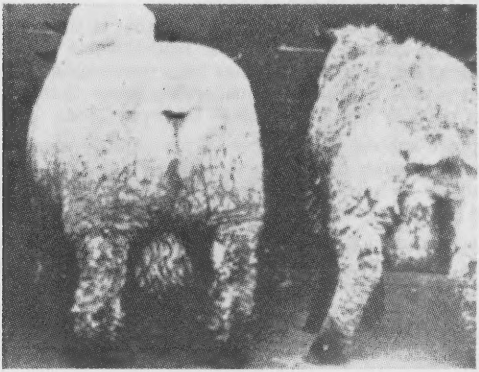
Sheep are subject to parasites — particularly stomach worms, tapeworms and other internal pests. Lice, although readily visible, are not nearly as harmful. Control of all parasites is essential for successful sheep husbandry.

Damage from dogs and predatory animals has created havoc with many flocks, but this problem is by no means insurmountable. The Provincial Government has a predator control policy which helps to lessen the ravages of coyotes and wolves. Proper fencing assists in controlling losses; penning the flock during the night and early morning will also prove helpful.

The high cost of good sheep fencing is an important factor to be considered by the sheep producer. The most satisfactory fence is made with woven wire, eight stays, forty inches high on posts set one rod apart. The necessity of one or two strands of barb wire above the woven wire will be determined by the type of livestock on the other side of the fence. The initial cost of sheep fencing is high, but when this cost is spread over a period of years, the cost per sheep is relatively low. A woven wire fence is recommended but a tight barbed wire fence of at least five strands will prove partially satisfactory. If the flock is provided with ample pasture within the fenced area an "airtight" construction job is not nearly so necessary.

An efficient, well managed, sheep enterprise is profitable. This is evidenced by accurately kept records of a sheep producer in Manitoba. His flock, of approximately 150 ewes, doubled his original investment of $2,000 during the first year of operation. The producer hastens to mention, however, that there is an important factor to be considered by both beginners and by those contemplating the raising of sheep. Production must be planned to fit into the operation of the farm. The size of the flock must balance with the overall farming enterprise. If not, a flock may be either too small or too large and breeding and feeding will tend to be a hit and miss program. In other words, the management practices may be inadequate and the results discouraging. (This may be the reason why sheep receive less care than any other type of livestock and why there are not more of them on farms.)

GOOD BREEDING STOCK — THE PRIME REQUISITE



The ram on the left is the type of flock ram to own. The ram shown on the right should never be used.

Breeding Systems

Regardless of the breed or the breeding system used, the producer should strive to produce animals with thick, deep bodies in order to meet the requirements for top market lambs. Since the wool produced from a breeding flock is part of his income, the producer also needs to select individuals with heavy fleeces of good quality. Good quality in wool involves fineness of fibre, crimp, and freedom from such extraneous materials as dirt or chaff.

The following breeding systems may be employed in a commercial flock:

(1) **Grading up** — This is the practice of breeding purebred rams of a given breed to grade or native ewes and their female offspring during successive generations. e.g., continuous use of Suffolk Rams.

(2) **Crossbreeding** — In this case, the ewe flock is bred to a purebred ram of a different breed, e.g., grade Suffolk ewes bred to an Oxford Down ram. The merits of crossbreeding are: (1) Hybrid vigor, as manifested by thrifty and vigorous lambs; (2) Desirable traits of two different breeds can be brought together resulting in a more desirable type of market lamb. It is essential that a top quality purebred ram be used. Many producers mistakenly believe that crossbreeding eliminates the necessity of a good quality sire. One disadvantage of crossbreeding is that it is difficult to maintain a definite plan of crossbreeding in a small flock. If a planned program is not rigidly adhered to, mongrels can result and the advantages of the system can be lost. Crossbreeding systems which may be used in a commercial flock are:

(1) **Two breed cross** — Sometimes referred to as the single cross, this method involves the mating of the ewe flock to a ram of a different breed (e.g. Suffolk ram on Shropshire ewes). It is generally advisable to market all the resulting progeny (especially in a small flock) because retaining some of the crossbred ewe-lambs for breeding may result in off-types or mongrels. Replacement ewes can be bought **or** a stud ram of the original breed can be used in the flock every few years to obtain replacements to maintain the flock size when older ewes are culled. An example of this type of production is the breeding of Suffolk or Cheviot rams to Western Range ewes. The range ewes are hardy, good wool producers and the Down rams give good fleshing ability and desirable market quality to the resulting crossbreds.

(2) **Three breed cross** — In this case the crossbred progeny resulting from the crossing of two distinct breeds is retained as the basis for the breeding flock and is mated to a ram of a third breed. All of the progeny of this mating is marketed as slaughter lambs. This type of program forms the basis of the sheep industry in the British Isles, wherein Leicester rams are mated to North Country Cheviot ewes. The Leicester-Cheviot crossbreds, known as half-breds, are then mated to Down rams (such as Suffolk, Oxford, Hampshire) to produce market lambs. This system has advantages in that the desirable characteristics of three breeds are brought together for the production of top quality lambs. The Cheviots contribute vigor and hardiness to the crossbred ewe while the Leicester imparts size and milking ability. The Down breed provides the blockiness and desirable carcass qualities required in a market lamb.

Experimental evidence reveals that hybrid vigor and improved type and quality can be achieved by cross-breeding. However, in this country no one plan involving any specific breeds has been named as the most effective. It is, therefore, still up to the producer to determine what breeds and what program are most suitable for his own particular purpose.

Selecting the Flock Ram

Buying a poor ram to head the flock is false economy and one of the most expensive mistakes that a sheep breeder can make. Whether it be grading up the flock or crossbreeding, the flock sire transmits his inheritance to as many offspring as all the ewes combined. Improvement therefore is secured mainly through the use of top quality rams. When selecting a ram the following points should be considered:

(1) **Conformation** — Rams of the mutton breeds should possess depth and width of body and be thickly and firmly fleshed. Width of loin and depth and fullness of the rear quarters are particularly important. A dense and uniform fleece of good quality is a prime requisite. The use of rams with black fibres in the fleece should be avoided.

(2) **Development and age** — Strong, vigorous, well developed individuals should be selected. They should have broad heads, short thick necks and show normal testicle development. January or February born ram lambs, if properly developed and carefully used during the following breeding season, will cover a small flock of up to 25 ewes. A shearling ram or a mature ram should not serve more than 50 to 60 ewes.

(3) **Breed type** — Breed type, essential in the flock sire of a purebred breeder, is not so important if the ram is to be used on a commercial flock. However, a ram should be free from heritable defects such as parrot mouth or bulldog jaw (undershot or overshot jaw), or only one testicle (ridgling). A good breeding ram should have plenty of strong bone and exhibit strength of pasterns.

Selection in the Ewe Flock

Flock income is obtained from the sale of wool and market lambs, both of which measure ewe productivity. The individual ewe's ability to shear a good fleece and to raise a heavy lamb will determine whether or not she remains in the breeding flock. Poor producers should be culled each fall. Ewes which have not produced lambs should be marketed, as should older females with unsound udders or bad teeth.

Replacements may be made either by retaining ewe lambs or by buying suitable ewes. The following recommendations are suggested in selection:

(1) Keep only the thrifty and quick growing lambs, giving some consideration to twins.

(2) Select only lambs possessing good conformation.

(3) Retain lambs with dense fleeces of good fibre length. Discard lambs with black fibre in their fleeces.

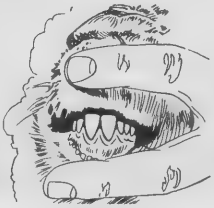
(4) Dispose of individuals with poor feet, legs or mouths.

The same recommendations apply where possible, to the purchase of older ewes. Generally speaking, the stockyards are poor places to buy breeding ewes. Animals at the yards are usually culls from other flocks.

Determination of a Sheep's Age by its Teeth

The age of a sheep may be estimated by examining its incisor teeth. The sheep, like the cow, has no incisor teeth on the upper jaw. It has only four pairs of incisors or "biting" teeth along the front of the lower jaw, which together with the lips and the gum of

Lamb's Mouth



Yearling

2 Year Old

3 Year Old

4 Year Old

Older Sheep

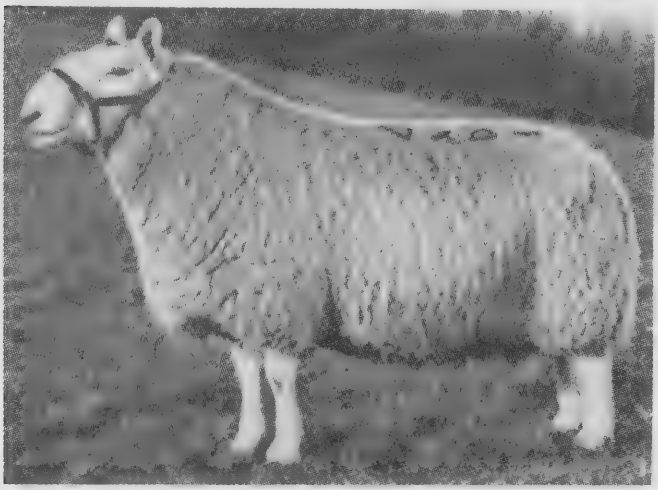
the upper jaw, enable the sheep to gather and bite off each mouthful of food. A lamb, early in life, has the full complement of eight (four pairs) of incisors. These temporary, or milk teeth, are smaller and narrower than the permanent teeth which gradually appear later. At approximately one year of age the centre pair of temporary teeth are lost and are replaced by two larger permanent incisors. Each succeeding year a pair of permanent teeth replace the "milk teeth", until at four years of age a sheep will have four pairs of permanent incisors. Age cannot be estimated accurately in a sheep past four years of age. The incisors become shorter and gradually spread as the sheep advances in age. In older sheep, the teeth often become loosened and fall out at which stage the animals are referred to as "broken mouthed". An animal in this condition cannot graze properly or make the best use of its feed. It should be culled from the flock.

BREEDS OF SHEEP AND THEIR USE ON MANITOBA FARMS

Suffolk — This breed of sheep is the most common in Manitoba. Its main characteristics are a black head and legs, both of which are free from wool. They are hardy, and good foragers. The ewes are excellent mothers because of their good milking qualities. Suffolk rams are used extensively in crossbreeding programs because the resulting hybrids make excellent market lambs. The wool clip from Suffolks is generally lower than that from most other breeds. Fleece weights average from 6 - 8 lbs. and range from ⅜ staple to

Suffolk Ram

¼ staple in fineness (Wool grades used in Canada are outlined in detail on page 42). Black fibres are sometimes found in the fleece and producers should guard against keeping individuals which tend to have this characteristic. Mature rams weigh 225 lbs. and over and ewes reach 150 lbs. and over.



North Country Cheviot

North Country Cheviot — This breed has recently gained considerable popularity in Manitoba due to its prolificacy, hardiness and valued use in a crossbreeding program. The lambs are strong and active at birth and the ewes are excellent milkers and good mothers. The head, and the legs below the knee and hock are white and free from wool. Average fleece weights range from 6 to 8 lbs. should grade from ⅜ staple to ¼ staple. Maximum mature weights for ewes and rams are 200 and 300 lbs. respectively.

Border Leicester — Although at one time there were a number of flocks of Leicesters in Manitoba, the breed is now practically non-existent in the Province. The fleece of this breed is long and coarse and tends to part down the middle of the back, making the breed less hardy under Western Canadian conditions. The breed is mentioned here because of its importance in the crossbreeding program of Great Britain's sheep industry. Under that system Border Leicester rams are mated to North Country Cheviot ewes to produce

the well known "Half-bred" ewe. These crossbred ewes form the basis of the breeding flocks which are bred to Down rams, e.g., Suffolk, Hampshire, Oxford, to produce top quality market lambs. A similar crossbreeding plan has been carried out successfully in Eastern Canada and, it is felt could also be adopted in Manitoba.

Border Leicester

Classed as a long wool breed, the Leicester is of good size, with ewes weighing from 160 to 200 lbs. and rams from 200 to 250 lbs. The head and lower parts of the legs are free from wool and covered with white hair. The fleece is long and comparatively "open" with the staple measuring from five to eight inches in length. The wool is coarse and will grade low ¼ staple and coarse. Fleece weights range from 8 to 12 lbs.

Oxford Down — The Oxford is the largest of the Down breeds. The ewes average slightly more than 200 lbs. when fully mature, and mature rams weigh from 250 lbs. to over 300 lbs. Because of the larger size of the breed, the lambs usually finish for market at heavier weights than those from most of the other breeds. Fleeces weigh up to 10 lbs. and usually grade ¼ in fineness. The wool covering on the head usually extends slightly below the eyes, and, on the legs, the wool comes down to well below the knees and hocks.

Oxford Down

Shropshire

Shropshire — Once a very popular sheep in Manitoba, Shropshires are now relatively few in number in the Province. The excessive covering of wool on the face and about the eyes has been found to be objectionable by commercial producers. A typical Shropshire

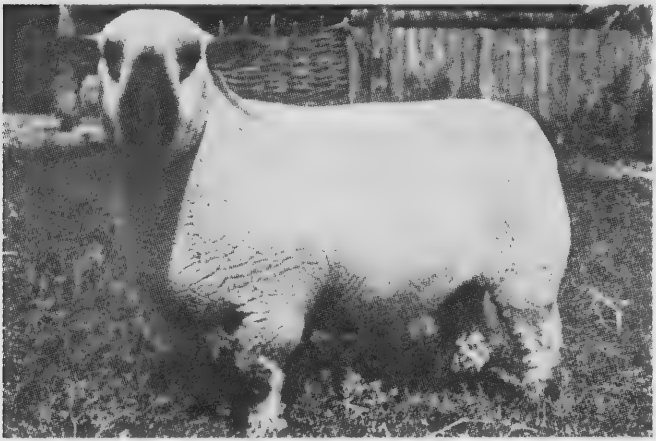
is thick, symmetrical and low set, and, in these respects, approaches the ideal in mutton sheep. Shropshires are of medium size, being larger than Southdowns but smaller than the other Down breeds. The ewes weigh 140 to 175 lbs. and the rams from 175 to 225 lbs. Wool yields in most flocks average from 8 to 10 lbs. per fleece. Shropshire wool is especially good in respect to density and is almost as fine as Southdown wool, grading ⅜ down to ¼.

Southdown

Southdown — The Southdown, the smallest of the Down breeds, closely approaches the ideal in mutton characteristics, being thick, low set and compact. The body is well covered with wool, which extends well over the face and legs. The fleece is comparatively short but dense, soft and of fine quality. An average fleece will weigh between 6 and 7 lbs. and will fall into the ½ grade. Because of its conformation, this breed has been widely used in the producion of crossbred market lambs, but is losing favor due to lack of size.

Hampshire — This is a fairly large breed with mature rams often weighing 250 to 300 lbs. and ewes over 175 lbs. It possesses very good mutton conformation. The wool covering extends well down the legs, and on the face comes down to a point midway between

the eyes and the tip of the nose. The face, ears and legs, where not woolled, are covered with dark brown hair. Fleece weights average from 8 to 10 lbs. and the wool is of fine texture, usually grading ⅜ staple. Because black fibres are sometimes found in Hampshire fleeces, breeders should select only individuals that are free from this defect. Very few Hampshires are raised in Manitoba. No reason is evident for this unpopularity, since the breed and its crosses produce good quality market lambs.

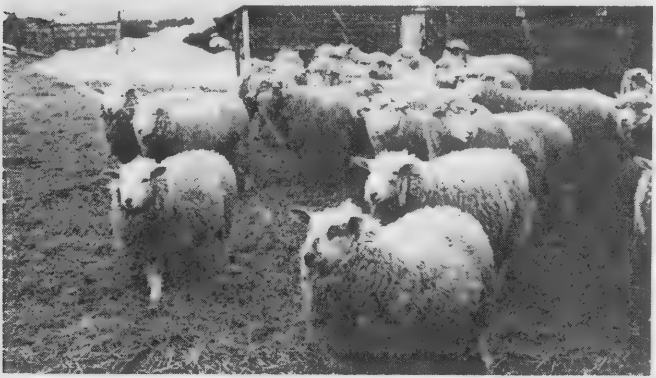


Hampshire

Corriedale — This breed was developed in New Zealand as a dual purpose breed to give both the mutton conformation of the Down breeds and a fine wool similar to that of the Merino and Rambouillet. Corriedales produce a heavy, dense fleece of fine wool which usually grades ½ staple. Fleece weights of 15 lbs. and over can be expected. The face and legs are white and the wool on the face extends below the eyes. Corriedales are good foragers and possess the "flocking habit" but as a pure breed, seem to lack prolificacy and hardiness. Under Manitoba farm conditions, their main place is in a crossbreeding program to improve the fleece quality and fleece weights of farm flocks.

Two Corriedale Rams

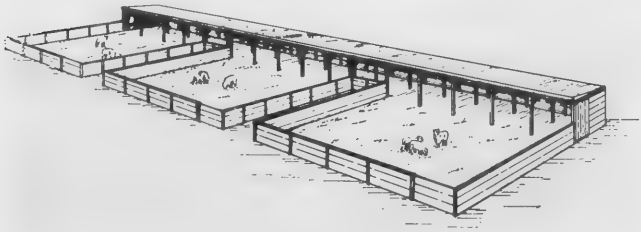
Western Range Ewes — Some Manitoba commercial sheep producers purchase "cast" range ewes, which have been culled from range bands to form the basis of their farm breeding flocks. Under Manitoba conditions these ewes remain in production for another two or three years. They are hardy and being primarily of Rambouillet and Corriedale breeding tend to flock together and to produce



A group of Western Range Ewes. A number of ewe lambs which were sired by a North Country Cheviot Ram are shown in the foreground.

heavy top quality fleeces. When bred to Down or North Country Cheviot rams, the ewes can produce desirable market lambs.

The range ewe also appears to have a place in a "three breed cross" type of market lamb production. In this case the range ewes are bred to a North Country Cheviot ram. The lambs from the cross are hardy, thrifty, and possess both scale and good fleeces. Selected crossbred ewes from such a mating can be used to form the basis of a farm flock. These ewes would then be mated to a Down ram to give top quality market lambs.



Picture of shed for sheep

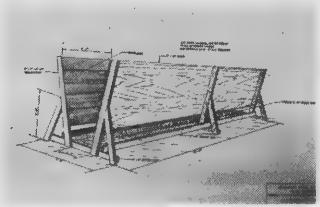
Expensive and elaborate buildings are not necessary for sheep. Existing buildings can often be remodelled to provide satisfactory housing. The main requirement is protection from winter storms and cold rainy weather. Sheep suffer more from draughts and dampness than from low temperatures. The sheep shed or barn need not be warm. An open-front shed will generally provide a flock with the necessary shelter, if some other natural shelter from the wind (such as trees or hills) is present. If lambs arrive during cold weather, warm lambing quarters are necessary.

If a closed-in type of building is used, large doors, at least eight to ten feet wide, should be provided to prevent crowding and injury. Provision should also be made for ventilation. One square foot of window space is needed for each twenty square feet of floor space for satisfactory lighting. A guide to space requirements follows:

Covered shelter for mature animals — 8-12 sq. ft. per animal
Shelter for lambs — 5-8 sq. ft. per animal.
Outside exercise area — Double above figures
Lambing pens — 16-20 sq. ft. per ewe.

Feeding Racks

Feed racks, whether stationary or portable, should be constructed to prevent chaff and dirt from falling on the backs of the feeding sheep. Hay and chaff in the fleece makes shearing more difficult and will also lower the quality of the fleece. Feed racks should also be constructed in such a way that the sheep do not rub the wool from their necks while feeding. If sheep are hand fed, 1 to 1½ feet of feeding space is recommended per mature sheep. With self-feeding, the above feeding space requirements may be reduced by one-half.



Suitable Feed Racks

Further details on housing may be obtained from a publication entitled "Sheep Housing and Equipment", which is a catalogue of suitable plans for sheep barns and equipment. The catalogue may be obtained from Agricultural Representatives or by writing to the Publications Branch, Manitoba Department of Agriculture and Conservation, Winnipeg 1, Manitoba.

PLENTY OF GOOD FEED IS ALWAYS IMPORTANT

It has long been the mistaken belief of many sheep producers that sheep will survive on all kinds of weeds and bushes and still return a handsome profit. Well fed ewes produce more strong thrifty lambs and shear heavier fleeces than those which receive scanty rations. The lambs from ewes fed an ample, well-balanced diet, will make rapid gains during their first few weeks, and if good pasture is provided, can be marketed directly from pasture, without supplementary grain feeding of either ewes or lambs.

Pasture for Sheep

Generally speaking, most pastures satisfactory for other classes of livestock are also satisfactory for sheep. The use of a mixture of several grasses and legumes in a pasture is recommended because it provides a better balance of nutrients, increases productivity of the pasture and lengthens the summer grazing period. The likelihood of bloat is lessened if there is a good percentage of grasses in the pasture mixture. Some suggested legume grass mixtures and rate of seeding per acre are:

1. Brome grass — 9 lbs.; Alfalfa — 3 lbs.
2. Brome grass — 5 lbs. Meadow fescue — 4 lbs. Alfalfa — 3 lbs.

A pasture program for sheep should provide a continuous supply of short fine herbage throughout the entire grazing season. Because they like young succulent grass, sheep tend to over-graze certain areas and leave other parts of the pasture untouched. The grass in these ungrazed areas will become ripe, coarse and often unpalatable. On the other hand, an over-grazed pasture will lose its productivity through weed infestation. Both of these undesirable effects can be controlled by rotational grazing. Another reason for rotating the sheep pasture is to reduce the internal parasite problem. A good sheep pasture, whether of native or cultivated forages, should be on fairly high well drained land. Damp or wet areas not only intensify the likelihood of internal parasites but in addition contribute to foot rot. Pasture provides the cheapest source of good nutritious feed. Greater profits will follow good pasture management practices. More information on this subject may be secured from the pamphlet entitled "Forage Crops for Manitoba" which can be obtained from local Agricultural Represenatives or by writing to the Publications Branch, Manitoba, Department of Agriculture and Conservation, Winnipeg 1, Manitoba.

Temporary and Fall Pastures

During the late summer and early fall, the forage production of permanent pasture is likely to deteriorate considerably. At the same time, lambs become heavier and demand greater amounts of feed for continued growth. Under most conditions in Manitoba, market lambs should be finished right off the grass. Providing extra pasture at this time of the year will not only finish lambs, but will also insure that ewes are well fleshed at the time of breeding. This so called "flushing" of ewes at breeding time will result in a larger lamb crop the following spring.

Annual crops such as rape, millet or oats will make very good supplementary pasture. Fall rye grown for grain may also be used as additional pasture during the fall and again in the early spring.

Mineral Requirements

The mineral requirements of sheep are much the same as for cattle. Generally, the only minerals needed are sodium, chlorine, iodine, cobalt, calcium and phospate. The first four mentioned are ingredients of cobalt-iodized salt. Calcium and phosphorous are available in either bone-meal, dicalcium phosphate or defluorinated rock phosphate. To provide all the necessary minerals, a mixture of equal parts of loose cobalt-iodized salt and either bone-meal, dicalcium phosphate, or defluorinated rock phosphate is recommended. Commercial mineral mixes are also very satisfactory. Sheep should have access to the mixture at all times. Loose salt is preferred to block salt, as sheep may damage their teeth when licking at a salt block. Minerals provided for sheep on pasture should be under cover to prevent damage from the weather.

A deficiency of iodine in the ration of pregnant ewes can result in the birth of soft, flabby and goitrous lambs. The lambs usually show an enlargement of the thyroid gland in the region of the throat. Some are dead at birth and some are so weak that they die within a few days. Goitre can usually be prevented by feeding a mineral mixture. If a flock does not respond to mineral feeding, goitre in new born lambs can be prevented by feeding potassium iodide daily to the bred ewes for three months prior to lambing. Four ounces of potassium iodide dissolved in a small amount of water and sprinkled over 100 lbs. of salt is recommended. The potassium iodide may also be given by dissolving ¼ ounce in the drinking water consumed daily by 50 ewes.

Provide Plenty of Clean Water

Sheep need to be supplied with ample quantities of fresh, clean water. Contaminated and dirty water may contain parasites. Mature sheep will consume about a gallon of water a day. Before the pasture season, nursing ewes may need up to 1½ gallons of water daily. Ice and snow in winter are not substitutes for good water.

Winter Feeding of the Flock

Proper feeding is probably the most important single factor determining the profitability of a flock of sheep. The winter feeding period is the most critical time. Properly fed ewes will raise larger, thriftier lambs and will produce heavier fleeces. Since income from a flock of sheep comes from the sale of lambs and wool, the importance of proper winter feeding is obvious. Ewes should be fed to gain 30 to 40 lbs. in weight during pregnancy. The object should

be to keep the ewes in good healthy thrifty condition but not overfat.

A sheep producer, like a cattle producer, will want to make the best use of available home grown feeds. The sheep's digestive system will make efficient use of good quality roughages, which should form the basis of the feeding program. Tests have shown that good quality, well cured legume hay is the best feed for sheep. Alfalfa hay contains enough of all the necessary nutrients except minerals to carry ewes through the first 3 months of gestation, without additional feeding of grain or protein concentrate. A well cured legume-grass hay mixture is a particularly satisfactory feed for sheep.

Sweet clover hay is also a satisfactory winter roughage provided that it has been cut before maturity. As sweet clover matures, its palatability declines, as does the protein content due to heavy leaf loss during harvesting.

Red clover hay is a very satisfactory feed for sheep, provided it has been cut and cured before it has become too far advanced in maturity.

When cut at the proper stage of maturity, most grass hays are palatable and fairly nutritious. For best results grasses should be harvested before fully headed. As grasses mature, protein content rapidly decreases with subsequent loss of palatability. Timothy hay, if cut when fully mature, is a rather poor sheep feed, since the heads from the hay often get into the fleece, thus lowering its quality and sometimes causing irritation to the sheep's skin.

Native hays are satisfactory sheep feeds, if cut and cured at the proper stage. Coarse native hay such as slough grass must be supplemented with liberal quantities of grain in order to provide necessary nutrients.

The cereal hays such as oat hay, commonly referred to as oat green feed, should be cut when the kernels are in the milk or early dough stage to obtain a feed of good value. Cereal hays are generally deficient in minerals and will be very low in protein content if they are nearing maturity when harvested.

Silage can form a large percentage of the ration of pregnant ewes. Corn silage is an excellent succulent roughage for winter feeding and its value by weight when fed as part of a balanced ration, is approximately one third that of good quality hay.

Legume or grass-legume silages are higher in protein than corn silage and usually contain somewhat higher proportions of protein and minerals. However, sheep should not be wintered on silage alone as it does not contain all the nutrients necessary to maintain body weight and produce healthy lambs.

Turnips, mangels, or similar succulents will be relished by wintering sheep. They add variety to most rations and will help to stimulate the ewe's appetite.

Concentrates

Only a small amount of grain or concentrate is necessary if the flock is provided with good green leafy, well cured legume or grass-legume hay. When native grass or cereal hays are the only available roughages, some grain must be fed, especially during the later stages of the ewes' gestation period.

Oats are the best single grain for sheep. It is not necessary to grind oats, although rolling may improve palatability and is desirable for creep feeding of young lambs up to six weeks of age. Grinding or rolling of oats is only recommended for very old ewes with broken mouths or poor teeth.

The addition of approximately ½ lb. of oats per day to a ewe's ration is generally sufficient. This should be increased to 1-1¼ lbs. for a ewe nursing lambs and not on pasture. Protein concentrate should be added to the grain ration if the roughage is poor. Linseed oil meal or soybean oil meal are both satisfactory.

Rations for bred ewes

First 3 months of pregnancy —

Suggested daily rations are:

(1) Good quality legume hay (clover or alfalfa) 4-5 lbs.

(2) Legume — grass hay mixture 5-6 lbs.

(3) Legume or mixed hay 3-5 lbs.; silage 2-3 lbs.

(4) Silage 5-8 lbs.; legume or mixed hay 1-2 lbs.; grain ½ lb.

(5) Grass hay 4-6 lbs.; grain ½ lb.

Last 2 months of pregnancy —

To improve the ewe's general condition and prepare her for nursing, the first three of the above mentioned rations will be satisfactory with the addition of ½ lb. of grain per day. With the

last two mentioned rations, some extra protein supplement should be included in the grain ration. A suggested concentrate is:

Oats — 60 lbs.
Bran — 25 lbs.
Linseed oil meal or soybean oil meal — 15 lbs.

One half lb. of this mixture added to the ewe's daily roughage allowance should keep her in good condition up to lambing time.

During the first 4-5 days after lambing a ewe should consume a very limited quantity of grain. The grain allowance is then gradually increased to approximately 1½ lbs. per day. The extra grain is needed until pasture is adequate.

Creep-feeding Lambs

Lambs at 2 to 3 weeks of age will begin to nibble at grain and hay. The ewe's milk should be supplemented with creep feeding.

A Suitable Lamb Creep

A corner of the pen boarded up to keep the ewes out but allowing the lambs to help themselves will make a suitable feeding area. The creep should be built with upright rails or slats spaced 7 to 9 inches apart. The openings can be made wider to allow the lambs to pass through as they become larger. For the first few days a mixture of equal parts of rolled oats and bran is satisfactory. A small amount of good green leafy hay should also be provided. After the lambs are six weeks old, grinding the grain is not necessary. From this time until weaning, a mixture of 10 lbs. corn, 10 lbs. barley, 20 lbs. oats, 10 lbs. bran, and 10 lbs. linseed oil meal or soybean meal is satisfactory. Lambs will prefer such a mixture but can be fed whole oats alone.

When lambs are hand-fed in creeps, feed troughs should be cleaned daily and fresh hay and grain provided.

Creep feeding is most important when the lambs are young and before they are placed on pasture. Such feeding is again essential later in the summer when the pastures become sparse and the ewe's milk supply drops.

Rations for Rams

The ram, like the ewes in the flock should have good pasture, hay or silage. In general, the rations fed to the ewe flock will suffice for the ram. Rams do not need grain except prior to, and during, the breeding season, when they may be fed about one lb. of grain mixture daily.

Rams do well on a limited amount of a succulent feed such as silage, but mangels and sugar beets should be avoided as they sometimes lead to the development of urinary calculi (small stones consisting of mineral salts in the uretha). Rams should not be permitted to become overfat and sluggish through overfeeding or lack of exercise. Feeds containing hormones should not be fed.

"SHEEP SENSE" AND GOOD MANAGEMENT WILL PAY OFF

Good management applies to all phases of sheep raising. It includes a well planned breeding program, proper feeding and wise disease prevention and control. Some simple "extras" in care and management will help raise better crops of lambs and wool.

Care at Breeding Time

Small lamb crops may be due to poor management practices during the breeding season. One of the first considerations in preparing the ewe flock for breeding should be to cull the flock thoroughly. Ewes that have bad udders or broken mouths or show other undesirable characteristics, should be culled. Poor milkers, poor mothers and non-breeders should also be culled.

The flock should then be treated for internal parasites and placed on good pasture about three weeks prior to breeding in order to have the ewes in good gaining condition. This procedure is known as "flushing" and should result in a larger lamb crop. Flushing tends to stimulate the production of ova in the ewe and, as a result, a greater proportion of twins. Provision of good pasture just prior to and during the breeding season is probably the most suitable and economical method of flushing. Ewes can often get much extra fall feed on stubble fields, second growth tame pasture, fall rye, or annual crops such as rape or oats. However, under Manitoba conditions, the breeding season on many farms is in November and early December, when pastures are not available. Flushing may be accomplished under these conditions by feeding good quality hay and a small amount of grain (½ to 1 lb. of whole oats per ewe each day).

Before the breeding season, all ewes should be "crutched" or "tagged", that is, the rear parts should be sheared clean of dirty wool and manure tags. Likewise all excess wool and tags should be sheared from the belly of the ram to insure more effective settling of the ewes.

Should Ewe Lambs be Bred?

The practice of breeding ewe lambs may be slightly more profitable because more lambs are produced during the ewe's lifetime, but is a questionable practice under most farm conditions. Generally they lack the maturity to produce and rear thrifty vigorous lambs. If ewe lambs are bred they should weigh at least 115 to 120 lbs. at breeding time. Ewes lambing at yearling age require close attention as they are generally poor mothers, more apt to have difficulty in lambing, and may lack an adequate milk supply. Slower growth of the ewe the second year often results, although this setback is usually overcome. The wool yield will not be affected.

Time to Breed

In Manitoba ewes normally have their first heat period during mid August or early September. The time of lambing in the spring can be controlled by the time the ram is placed in the flock. Unless early winter lambs are wanted rams should be removed from ewe flocks prior to the beginning of August and returned at a date determined by the desired period of lambing. The gestation of a ewe is approximately 5 months, varying from 140 to 152 days and averaging 146 days.

Early lambs need warmer quarters and more feed and attention than lambs born later in the season. When well cared for they make quick gains and finish on pasture for an early market. March

to May is the usual time for lambing for most commercial producers because warm lambing quarters are not essential and other farm chores are not so pressing at that time. Some prefer to have the ewes lamb on pasture because the lambs usually are stronger, less likely to contract infections and are provided with more milk by the ewes. However, lambs born late in the spring do not thrive as well later in the summer and finish for market late in the fall when prices are usually lower.

The interval between heat periods in ewes varies from 16 to 21 days. The date when the ram is turned in with the ewes should be recorded in order to know when to expect the first lambs the following spring.

Management of the Ram

To avoid a long period of spring lambing, the flock owner should aim to have his ewes bred to lamb within a 3 to 4 week period and should keep a close check on the breeding performance of the ram to see that the ewes are being settled.

The ram should be kept in thrifty condition at breeding time but not overfat and sluggish. A half to one pound of oats a day may be fed along with good winter roughage or pasture. The number of ewes a ram should serve depends on the system of management. The most common practice with Manitoba grade flocks, is to allow the ram to run continuously with the ewes. This system is quite satisfactory in small flocks. A strong shearling that is well developed will serve from 35 to 50 ewes, while a good two year old or aged ram will cover 50 to 60 ewes. Ram lambs, to be used for breeding should be strong and well grown, weighing as least 110 to 120 lbs. and should not be used on more than 20 to 25 ewes. If a ram lamb is used, it is advisable to remove him from the flock during the day and allow him to run with the ewes only at night when they are corralled near the buildings. During the day he can be fed extra hay and grain to keep him growing and in good condition. Mature rams managed in the same way, can handle up to 75 ewes.

A ram can be used over a large number of ewes by hand mating or "hand coupling". With this method, the ram is not allowed to run with the flock. The ewes when in season are brought to him for service. If this type of management is followed a mature ram is capable of settling 75 to 100 ewes.

When the ram is turned in with the ewes, his brisket should be marked with lamp black or red ochre. Mix lampblack or red ochre to a pasty consistency with clear motor oil and smear it well back on the ram's breast between forelegs. In this way a sterile ram can be detected and replaced before the breeding season advances too far. The color should be changed every 18 days —

3 weeks. Ordinary oil base paints should not be used since they cannot be removed from the wool in the manufacturing processes. The ram should also be replaced if a large number of the ewes return for service.

Care of the Bred Ewes

The bred ewes should be reasonably well fleshed as winter approaches. Suitable winter shelter for protection from snow, wind and storms should be provided. An elaborate building is not necessary, but cool, dry, well ventilated quarters are essential and overcrowding should be avoided. Doors in the winter quarters should be at least 8 to 10 feet wide. Otherwise, there is a possibility of the ewes jamming in their attempt to get through with resultant abortions or other injuries. Feeding racks should be provided that will prevent feed wastage and also prevent dirt and chaff from falling into the fleeces of the sheep.

The early part of the winter is a good time to treat each ewe in the flock for internal parasites. This should be done at least a month before lambing to avoid the danger of abortion. If the parasites are removed from the sheep during the winter months there is less likelihood of them contaminating the pasture in the spring. It is also a good idea to dust the ewes with DDT or rotenone dust to remove ticks and lice which may be present. Ticks will migrate to the newly born lambs causing much discomfort.

The pregnant ewe should have plenty of exercise during the winter to promote thriftiness and to produce stronger lambs. Hay placed at some distance from the barn or shell will induce the ewes to take a greater amount of exercise. About 6 weeks before lambing ewes should be fed grain at the rate of ½ to 1 lb. daily per ewe.

This extra feed will help to nourish the unborn lamb and will aid the ewe in building up a liberal milk supply. Water and minerals should be available at all times.

Shortly before lambing remove all excess wool and dirty tags on the rear quarters and udder of the ewe. This will make it easier for the lamb to suckle and will prevent losses due to the ingestion of wool and filth. Young lambs sometimes swallow wool that forms into hard balls in their stomachs which may prove fatal if the digestive tract becomes blocked.

Care at Lambing Time

The flock at this time of the year demands the most attention. Neglect can easily result in heavy losses.

Warm clean pens that are free of draughts should be provided

if ewes lamb early. Separate pens are desirable for early arriving lambs. Such pens can be made by using hinged 4 foot panels or hurdles set up along the inside wall of the barn or shed. Satisfactory lambing pens can also be made by using bales of hay or straw. Heat lamps may be used to give additional warmth to aid in drying new born lambs and to prevent chilling. The lamp should be hung 2 feet above the bedding and protected by boards so that the ewes cannot rub against it or knock it down.

Lambing Pen with Heat Lamp

Separate lambing pens prevent the rest of the flock from bothering the ewe and prevents the lamb from wandering. In addition each ewe and her lambs can be given any special attention that may be required. The ewe is placed in the individual pen either just before or soon after lambing.

The flock owner should be on hand to care for every new-born lamb. When the ewe shows signs of delivering it is best to leave her undisturbed for a few hours. Most ewes will give birth within 2 or 3 hours after labor starts. However, cases of delayed lambing and difficult birth are not uncommon. Normal presentation is forelegs and head first, although occasionally the position is reversed with the hind legs emerging first. Excessive size of lamb, legs turned back, or twin lambs emerging at the same time are some of

the most common causes of difficult lambing. Under these circumstances mechanical assistance will be required.

Occasionally a lamb is born which, although appearing dead, may be saved by quick action. First remove mucous from the lamb's mouth and nostrils. Start the lamb breathing by slapping it on each side behind the shoulders, or by rubbing it vigorously with a burlap bag.

A vigorous lamb usually has no trouble feeding and will suckle within the first hour. A weak lamb, however, may be unable to get up to nurse and will soon die if assistance is not given. If the lamb refuses to nurse, it should be held up to the udder of the ewe and milk forced into its mouth.

In extreme cases is may be necessary to set the ewe on her rump, alternating left and right hips to facilitate nearness of each nipple. The lamb is placed on its side with back bone nearest the operator. In this position both lamb and ewe are relaxed and satisisfactory nursing results. A lamb which is chilled can be revived by placing it in warm water for a few minutes, and then rubbing it briskly with a warm woollen cloth to stimulate the blood circulation.

After lambing, the ewe should be given a small amount of good quality hay and a little warm water. Heavy feeding should be avoided for the first few days as this may stimulate too heavy a milk flow for the lambs. When this happens, the ewe's udder may become swollen and hard or the lambs may get too much milk and consequently scour. After the second or third day, some grain may be fed along with the hay, the amount being gradually increased until the ewe is on full feed. Equal parts of whole oats and bran is a very satisfactory grain mixture at this time. After four or five days, the ewe and her lambs can be returned to the flock, if the lambs are strong and active. Young lambs can withstand a considerable amount of cold once they are dry and they will probaby do better if they can get outside to sunshine and exercise. A creep feed should be provided for the lambs as soon as they become interested in whole feed — usually at 2-3 weeks of age. See page 23 for full discussion.

Handling of Orphan and Disowned Lambs

Frequently a ewe will refuse to accept her own lamb, especially if she has lambed while with the rest of the flock. A disowned lamb can be handled by tying the ewe in a separate pen so that she cannot bunt the lamb. Stubborn ewes often demand a lot of patience on the part of the sheep owner, and may have to be penned for several days, but sooner or later they will settle down and

accept their lambs. Smearing some of the ewe's milk on the back and hips of the lamb often aids in getting the ewe to accept her lamb or a lamb which has lost its mother. It is best to avoid bottle feeding if possible. An attempt should be made to place an orphaned lamb with a ewe that has lost her lamb or one that has only one lamb and has a good flow of milk. If this fails, it will be necessary to bottle feed with cow's milk. Even so, the orphan lambs should receive colostrum milk, at least for its first feed. Colostrum milk (the first milk from a ewe that has lambed) contains antibodies necessary in giving resistance to disease during the first few days after birth. Cow's milk or calf milk replacers have been fed successfully to lambs. The milk should be warmed to about 100 degrees F. and fed in a bottle with a suitable nipple. All feeding utensils must be kept clean and free from contamination. Do not overfeed for the first day or two. Begin by bottle feeding only 2 or 3 tablespoons every 2 to 3 hours. It can be gradually increased after the first week to 2 ounces a feeding, three times a day. In about 10 days three feedings a day of about 8 ounces are usually enough. Feeding lambs by the use of a shallow pan as soon as they can be taught to drink is advised, since bottle feeding requires much extra labor. Rolled oats and good quality leafy hay should be made available to the lambs at about two weeks of age. The following are two suitable formulae which may be used for bottle feeding of lambs:

(1) 6 oz. condensed milk
12 oz. water (boiled for ten minutes)
1½ tablespoons sugar

(2) 1½ pints warm cow's milk
1 beaten egg
1 teaspoonful cod liver oil
2 tablespoons sugar

Lamb Identification

Registered sheep owners must identify all their lambs by tattoo or ear tag prior to September 1st of the year of birth. A breeder who is registering sheep for the first time must apply to the Canadian National Livestock Records at Ottawa for his flock letters which are required for identification of his lambs. When tattooing, the flock letters are placed in one ear and the number of the lamb and designating year letter is placed in the other. Ear tags may also be used for identification. The tags will show the breeder's flock letters, and the lamb number and designating year letter.

Lambs should also be identified in commercial grade flocks to assist the owner in keeping records on each ewe in his flock. The most common methods are the use of sheep branding paints and small lamb tags which may be obtained from most livestock supply companies. The use of colored tags to denote year of birth, is very

helpful in locating individuals or determining age at night. The best time to identify the lambs is before the ewes and lambs are released from the lambing pens.

Docking

All successful sheep raisers recognize the necessity of docking lambs. A long tail tends to catch filth which may affect the health of the lambs. It gives a lamb an unsightly appearance which detracts from its selling value. In older sheep, long tails may hinder breeding.

Docked lambs are less likely to be troubled with fly strike and maggots. Docking should be done when the lambs are 4 to 5 days old and not later than 14 days of age. Very few lambs will be lost if they are docked when young. However, it is not wise to dock the lambs until they are strong and active.

Using a Burdizzo to Dock

The use of an instrument, known as the "Burdizzo", is recommended for the docking operation. The lamb should be held upside down, with the helper grasping the lamb's left front and left rear legs in his left hand and the right legs in his right hand. The Burdizzo is then clamped on the lamb's tail, at the second joint from the body, after the skin has been pushed slightly toward the body. The tail is then cut off inside the closed jaws with a sharp knife. Pine tar smeared on the open wound will help to stop bleeding and avoid

maggots or infection. The Burdizzo should be left clamped on the tail for a few seconds before releasing. The lamb should then be set down on all four feet to avoid bumping the wound. Do not use the Burdizzo on lambs over three weeks of age.

Some producers favor the use of an elastic band which is applied by an instrument known as on "Elastrator". The ring when put in postion on the tail, stops the blood circulation, causing the tail to wither and drop off in from 3 to 4 weeks. This method causes severe pain to the lamb for the first 20 or 30 minutes. There is also the risk of infection or fly strike since a small wound remains for a day or two after the tail drops off.

Docking may also be done by simply using a sharp knife or heated searing irons.

Castration

Ram lambs not intended for breeding purposes should be castrated at an early age. Uncastrated lambs, after reaching 60 - 75 lbs. will continually worry the ewe flock, thus reducing flock gains. Buck lambs receive a discount in price on the market.

Castration with the Burdizzo

The male lambs should be castrated before they are a month old, and preferrably between 1 and 2 weeks of age. Castration by the use of the "Burdizzo" pinchers is a recommended practice, since it is bloodless and leaves no open wound. This instrument crushes

the testicular cords until they are severed without rupturing the outer skin. The testicles are then gradually absorbed and will disappear in a few weeks time. In using the Burdizzo, care must be taken to see that is is clamped on well above the testicle, because the operation will be unsuccessful if the testicle rather than the cord is crushed. Also, each cord should be crushed separately, the centre area of the scrotum being left untouched, otherwise the blood vessels might be damaged and infection may occur which could be fatal. Examine the lambs a few weeks following the operation to make sure that no "slips" have occurred. The 12 inch size Burdizzo is the most convenient size to use on lambs. It should not however be used on older rams or calves for fear of damaging the instrument.

An elastic band applied on the scrotum close to the body with the "Elastrator" is another method employed in castrating male lambs. Its use and disadvantages were discussed in the section on docking.

Many producers still favor the oldest method of castration, which employs the use of a sharp knife. The lower third of the scrotum is cut off and the testicles are drawn out. This method, however, exposes the animal to excessive bleeding, infection, and maggot infestation.

Summer Care of the Flock

Before sheep are turned out to pasture in the spring, their feet should be examined. Most ewes keep their hoof growth worn off sufficiently, but some will need trimming to prevent lameness, crooked legs or broken down pasterns. Proper foot trimming is also a good preventative for foot rot. The feet should be trimmed with a hoof knife, hoof clipper or ordinary jack-knife so that the animals stand and walk correctly.

If not already done earlier in the winter, each animal should be dosed separately for internal parasites at least 24 hours before going on pasture. The flock, including the lambs, should again be dosed sometime during late spring to prevent a heavy infestation of worms. The flock should be sprayed for ticks shortly after shearing. Parasite control is discussed in more detail on page 43.

Bloat can be a problem when sheep are turned into pastures of luxuriant growth, particularly if considerable amounts of alfalfa or clover are present. To overcome the problem, first restrict the sheep to pastures that do not contain excessive amounts of legumes; secondly, feed the sheep dry roughage before turning them into lush pastures; and third, feed hay or dry feed in the shed where the sheep are corralled each night. For the first few days of pasturing the sheep should be allowed to graze for short periods only. There is more danger of bloat if the pasture is wet with dew or rain.

Summer shelter should be provided for the sheep to protect them from the sun and flies of the hot summer months and the cold driving rains of spring and fall. Plenty of clean water and minerals should be available to the sheep at all times.

Catching and Handling Sheep

Catch a Sheep Under the Neck or in the Flank — Not by the Wool

Sheep are generally much more easily injured in handling than any other class of livestock. A well trained sheep dog can be a wonderful asset in moving and corralling sheep, but a poor one is a constant worry and menace to the flock.

Sheep should not be caught by the wool. This is a rough practtice which can cause serious bruising of the sheep or lamb carcass. The most desirable way to catch a sheep is by grasping it under the neck or by the flank. When a sheep is caught by placing one hand under the jaw or neck, it can easily be held and its struggling is kept to a minimum. If the sheep is caught from the rear, the flank grip should be used. A sheep should not be caught by the hind leg, since its leg may be broken this way. Lameness may also result from straining the muscles of the leg.

The commonly accepted way to lead or move a sheep forward is to place the left hand under the jaw and the other hand on the dock. The hand under the jaw serves in guiding and controlling the sheep, while the hand on the dock urges it along. The easiest way to upend a sheep and place it on its rump for hoof trimming or shearing, is to place the left arm around the front end of the animal and pass the right hand under the body to grasp the far side hind leg. By pulling on the leg and raising the front of the sheep's body, the sheep is quite easily brought onto its rump.

The Easy Way to Move a Sheep

The Hard Way

Trimming a Sheep for Show

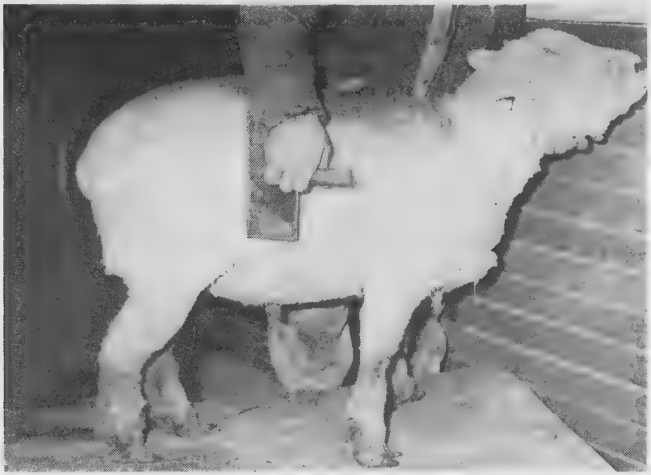
Trimming or blocking a sheep for show is an art. One only becomes skilled in the art by practice. The object in trimming or blocking an animal is to give it a deep, thick appearance and make it more pleasing to the eye.

First the feet should be trimmed so that the animal can stand squarely on all four feet and walk properly. All straw and other inert material should be brushed off the fleece with a stiff brush. If the fleece is very dirty, it will be necessary to wash it at least two to three months before the show. Soap, if used, should be used sparingly or it will remove all the yolk (wool grease) from the fleece and make it too fluffy. Many experienced showmen do not use soap at all. A fleece can be cleaned rather efficiently by rubbing the outside with a cloth or burlap bag dampened in warm water to which some sheep dip (2-3 tablespoons to a gallon of water) has been added. Dung locks may be trimmed off with the shears, but it must be done carefully so as not to leave a hollow appearance where fullness is desired. It is perhaps better to wash the sheep's rear quarters in a solution of warm warm to which some sheep dip has been added. The wool can then be carded and trimmed when dry.

Before trimming the sheep the fleece must be carded to pull out and straighten the wool fibres so that they can be cut evenly. To do the most effective work with a card, grasp the card and engage it firmly with the fleece. To release it, do not pull as you would a curry comb, but break it backwards in a revolving motion over the outside edge.

The sheep to be trimmed should be tied with a rope halter or fastened in a trimming stand so that its head is held in a normal position. The fleece should be well dampened with a solution of water and sheep dip, which is usually applied with a brush. The dampened fleece should then be thoroughly carded. In using the shears the bottom blade is held still and the top blade is moved to

complete each cut. Examine the sheep carefully to determine how much wool should be cut off the back to level the top and make it look as wide as possible.



Carding a Fleece Prior to Trimming

Start trimming by cutting down the back. Begin at the top of the shoulder and make a cut toward the rump, repeating the operation until the back has been cut down and levelled satisfactorily for the first time over. Do not take off too much wool the first time, since it is usually necessary to trim the entire sheep 3 or 4 times before a sheep is considered properly trimmed. The wool on the back should not be shorter than ¾ inch following the final trimming.

The sides should be trimmed in the same manner as the back, taking care to leave on as much wool as possible to make the animal appear uniformly wide. Trimming the rump, thighs and dock should be done so that the rump will carry out straight and on the same level as the back, and break over with fullness. The dock should be trimmed short and squared off at the base. The twist requires careful carding to give all the fullness possible. Trim the neck to merge smoothly into the shoulder. Finally the sides and back may be smoothed together.

When the trimming is completed, use the back of the card or some similar broad flat surface to gently pat the fleece, to improve

Blocking the Fleece for Show

its smoothness and density. Protect the fleece with a blanket to keep out dirt, condition the fleece and keep it compact. A satisfactory blanket can be improvised by cutting off the corner of the closed end of a burlap gunny sack and opening it along the stitched side. This is pulled over the sheep's head, with the corners tied to the rear legs.

LAMB MARKETING

Where lambs have had good care, good pasture and have been creep-fed, they will have reached the desired market weight of 85 to 100 lbs. in 4½ to 5 months. Under these circumstances they can be marketed, directly from the pasture, in good condition and can usually command top prices. If lambs are not ready for market at 4½ to 5 months of age, it is likely due to internal parasites. It is therefore very important that the entire flock, especially the lambs, be treated for internal parasites, so that they will not be robbed of what feed is available to them.

Even if the lambs are not ready for market at 4 to 5 months of age, they should be weaned. Weaning at this time will allow the ewes to gain in flesh and be in better condition at breeding time.

If weaning is done in July or August, fresh pasture can be used for the lambs to bring them up to the desired market weight and finish. If they are weaned later and good pasture is not available, they should be taken off pasture and dry fed hay and grain.

Feeding and Care of Lambs

Before being placed on dry feed, underweight lambs should first be treated for external and internal parasites and be vaccinated for "overeating disease". For further details see page 49.

Creep fed lambs from dry pasture have small capacity for feed. Developing the capacity of the lambs to take a maximum amount of feed is therefore necessary. Most experienced feeders start their lambs on high quality roughage, along with a very small amount of grain. Too much grain, or irregular feeding of grain may cause the lambs to go off feed, encourage scours, stiffness and possibly death from "overeating disease".

Whole oats, or oats mixed with barley makes an ideal grain ration in starting lambs on feed. Start by feeding not more than 1/5 to 1/4 lb. of grain per head per day. The grain ration may be increased gradually over a period of 3 to 4 weeks, to the point where the lambs are getting all the grain they will eat in two feedings a day. As the grain part of the ration is increased, the lambs will require less roughage. Water and minerals should be available at all times. When on full feed, lambs weighing 60 - 75 lbs. should eat about 1½ lbs. of grain and 1 to 1½ lbs. of hay per head each day. They should gain about 1/3 of a lb. per head per day, or 25 or 30 lbs. in 75 to 100 days.

Classifications and Carcass Grades of Lambs

About 65 - 75% of the lambs from Manitoba farms are sold direct to the packing houses. The remainder are consigned for marketing to commission firms in the public stock yards.

Although lambs are not officially graded when they are offered for slaughter, they are classified for purposes of prices and market reports. The commercial classes for market lambs are: good, common, buck and feeder. A good lamb is one which is well fleshed and has good body conformation. A common lamb is lacking in conformation or finish, or both, and usually sells for $2.00 to $3.00 less per cwt. than a lamb which is classified as good. A buck lamb is discounted at the rate of $1.00 per head after July 1st of each year, while feeder lambs are resold for further feeding, at prices relative to the demand.

A producer may sell his lambs on the basis of official carcass grades, if he so desires.

The grade designations established by the Canada Department of Agriculture are:

Grade A—Carcasses having excellent conformation, finish and quality.

Grade B—Carcasses having good conformation, finish and quality.

Grade C—Carcasses with only fair conformation, finish and quality.
Grade D—Carcasses which are poor from the stand point of conformation, finish and quality.
Grade E—Carcasses that are excessively over-fat.
Grade M, Culls—Carcasses of extremely poor finish and quality. This grade also includes carcasses having serious physical injury.

Bucks—Carcasses of mature, male sheep.

Grades A, B and C are sub-divided into classes according to weight as follows:

Grades A and B:

Class 1—Carcasses weighing from 36 lbs. to 51 lbs.
Class 2—Carcasses weighing from 52 lbs. to 56 lbs.
Class 3—Carcasses weighing over 56 lbs.
Class 4—Carcasses weighing less than 36 lbs.

Grade C:

Class 1—Carcasses weighing 36 lbs. and over.
Class 2—Carcasses weighing less than 36 lbs.

SHEARING AND WOOL PREPARATION

The wool clip is an important source of income in sheep production. If given proper care, the wool should help materially in paying expenses for the care and feed of the ewes, leaving the sale of lambs as net profit. A sheep producer can increase the value of his wool clip by selecting and keeping only ewes and rams which have high quality fleeces. The flock owner should select breeding ewes which do not contain grey or black fibres in their fleeces. Only ewes which are well covered with long, dense, fine fibred fleeces should be kept. Ewes which have coarse, open fleeces or which do not produce a heavy fleece should be culled from the flock.

Shearing time in Manitoba is late May or early June. The weather is usually warm enough then so that the shorn sheep will not become chilled. Shearing is more easily done during warm weather, since the oil or grease content of the fleece is higher and the fleece tends to lift from the sheep's skin, resulting in the clippers sliding more easily through the fleece.

Wool must be dry for shearing, and must be kept dry afterward. Damp wool in storage will soon become mildewed and will greatly decrease in market value. Many flock owners shut the sheep in the barn or shed the night before shearing. This prevents them from getting wet should it happen to rain. If penned closely, the sheep will tend to sweat and the wool tend to "rise" making it easier to

remove the fleece. Also, the sheep's stomachs will not be full of feed and they may be sheared with less discomfort to the sheep.

The shearing should be done on a clean floor. Dirty floors where dirt and straw can be picked up in the fleece are to be avoided. A clean canvas can be spread on the ground if shearing is to be done outside.

Shearing can be done by using either hand shears or a power shearing machine. Present day shearers prefer machines because of greater ease and speed. For small farm flocks of from 30 to 50 head, the hand shears or electric sheep shears are recommended. However, for larger flocks the gasoline or electric motor driven jointed shaft machines are preferable. These machines have more power and can do the job faster since they have a wider shearing head. Shearing equipment should be kept in first class shape. The Canadian Co-operative Wool Growers Limited, Toronto, provide a shearing equipment sharpening service for sheep producers.

There is probably no one method of shearing that is best, but the method practiced by farmers in New Zealand (known as the New Zealand method of shearing) is one which, if adopted, allows a shearer to remove a fleece with a fair degree of ease and speed. Skill in this method or any other method can only be acquired by practice. In the New Zealand method of shearing, the feet and legs of the shearer are used to keep the sheep under control and in position, leaving both hands free to handle the clippers and keep the sheep's skin tight as the wool is being sheared. The wool should never be pulled while clipping is in progress as it may result in cuts and abrasions. However, if the sheared skin is drawn tightly towards the shearing machine a closer and neater job will result.

Shearing in Progress

A special chart illustrating correct shearing methods may be secured from the Sunbeam Corporation (Canada) Ltd., Toronto, Ontario at a nominal cost. With practice, a shearer can remove a fleece all in one piece, thus facilitating its preparation for tying. Cutting the animal or making second cuts in the fleece can also be avoided.

Wool Preparation

A table 4 feet wide, 8 feet long and 3 feet high, with a top made of slats or chicken wire is suitable for the preparation of a fleece for market. The fleece should be spread out flesh side down so that dirt and tags can be removed.

A Satisfactory table for Preparing Fleeces for Market

The fleece is shaken to remove all the loose chaff and dirt, which will fall through to the floor. All tags and any grey or black fibres should then be removed from the fleece, bagged and marketed separately from the good wool.

Roll and tie each fleece separately with the flesh side out. Each side of the fleece is then rolled toward the centre to form a strip about 16-18 inches wide. This is then rolled into a neat bundle, starting from the rump end. By following this procedure, the best quality wool, will form the outside of the bundle. Each fleece should then be tied with a specially prepared paper wool twine. Binder twine should never be used because it cannot be removed in the manufacturing process. It lowers the value of the fleece and means less money to the grower.

Small amounts of wool, such as are obtained from the average-

sized farm flock are shipped in large jute sacks which can be obtained from wool handling firms. Such sacks hold from 200 to 225 pounds of wool. If wool is stored, it should be kept dry and clean.

Grading of Wool

Canadian wool in the fleece is classed or graded along three major lines as follows:

1. General condition and cleanliness.
2. Length of staple.
3. Diameter of fibre.

1. **General condition and cleanliness** — The presence of grease or yolk, seeds, chaff, burrs or other foreign matter determines the condition, shrinkage or clean content of any fleece. The wool produced from the farm flocks of Manitoba is classified Western Canada Domestic Type. It is subdivided into the following classes:

1. Bright — Wool that is well grown, of good color, and with very little shrink.
2. Semi-Bright - Wool that is average in character, rather dingy in appearance and carrying slightly more organic matter and foreign material.
3. Dark — Wool that is dark colored and quite heavy with sand or any other foreign material; also includes wools that are badly stained or fleeces that are brashy and wasty.

2. **Length of staple** — Sound wool is classed according to length of staple.

(1) Staple wool or combing wool - if the fibre is 2 inches or more in length.

(2) Clothing Wool - if the length of the fibre is less than two inches.

3. **Diameter of fibre** — The average diameter of the fibre in a fleece determines the quality division or grade. The following are the grades used in Canada with respect to diameter of fibre or "fineness". The corresponding American and English grades are also given.

	American	English
Canada Fine	Fine	64's - 70's - and finer
Canada ½	½ Blood	58's - 60's - 62's
Canada ⅜	⅜ Blood	54's - 56's
Canada ¼	¼ Blood	46's - 48's - 50's
Canada Low ¼	Low ¼ Blood	42's - 44's
Canada Coarse	Braid	36's - 40's
Canda Grey and Black		
Canada Defective		

Canada defective wool comprises wool which shows faults or defects that impair its value for manufacturing purposes. The more common defective wools are: dead, chaffy and burry, cotts, tags, damaged and kempy. Generally speaking, the finer wools command a slightly higher price on the market.

PARASITE CONTROL

Parasitic infection limits success with sheep and is one of the most serious items in reducing profits from a flock. Experienced sheepmen realize that sound methods for keeping parasites under control are necessary and the key to this control is proper seasonal treatment. Routine dosing and treatment coupled with good management practices such as rotational pasturing will keep parasite problems to a minimum.

Lambs suffering from severe internal parasite infestation

INTERNAL PARASITES

Stomach Worms

The most frequent symptoms of stomach worm infestation are persistent scouring, general unthriftiness and anemia. The membranes of the eyes and mouth become pale and in some prolonged cases swellings appear under the lower jaw and upper part of the throat. This condition is often referred to as "bottle neck". In severe infestations, lamb deaths can be quite numerous.

Stomach worms are small round worms (about 1 inch long) that inhabit the fourth stomach or abomasum of sheep. They suck blood and damage the lining of the stomach, thus lowering the vital-

ity and thrift of the sheep. The mature worms lay eggs which are passed out in the manure, and pastures soon become contaminated with increasing numbers of eggs from which young microscopic worms soon develop. The eggs and young worms are not harmful if swallowed during the first four or five days of development but when ingested after this time soon arrive in the sheep's stomach to mature and lay eggs, thus starting another cycle. The eggs and young worms require heat and moisture to develop and survive during the pasture stage of the life cycle. As a consequence, low, wet areas are especially favorable for their production. It is thought that most of the young worms and eggs on the pasture are destroyed by winter conditions in Manitoba. Therefore, it is wise to attempt to have the flock free of worms when they are placed on pasture in the spring.

Treatment

Phenothiazine is an effective drug for the control of stomach worms. It may be administered either in the bolus or tablet form, or as a liquid drench if the powder form is used. If the tablets or boluses are used the recommended dosage is: Adult sheep — 4 tablets (12½ gram size); Lambs — 2 tablets (12½ gram size).
If the powder is administered as a drench give:
Mature sheep — 1 ounce of powder mixed in whole milk or water
Lambs — ½ ounce.
(One heaping teaspoon phenothiazine powder weighs ¼ of an ounce)

Phenothiazine is available free of charge to all flock owners in Manitoba. To obtain your flock requirements, contact your local Agricultural Representative or the Livestock Branch, Manitoba Department of Agriculture and Conservation, Winnipeg 1.

Seasonal Program of Internal Parasite Control

1. All animals in the flock should be treated individually during the winter months. Do not treat ewes within a month before lambing and 3 to 4 days after, since abortions or other complications may result. The flock should be treated at least 24 hours before going to summer pasture.

2. During the pasture season, a mixture of phenothiazine and salt should be made available to the flock. A mixture of 1 lb. of phenothiazine powder mixed with 9 lbs. of cobalt-iodized salt is recommended. This treatment **will not rid** sheep of internal parasites and **will only tend to** control worm infestations. Pastures should not be over-grazed, but rotated if at all possible.

3. If signs of worm infestation are noted from early July onwards, all lambs and ewes should receive individual treatments.

4. If diarrhea and general unthriftiness caused by worms are noted during the fall months, before the breeding season, each individual in the flock should again be treated.

How to drench or administer tablets

Drenching or giving tablets to sheep is not difficult. Careless or inexperienced dosing may however, result in the accidental introduction of a tablet or some of the drench into the sheep's windpipe.

Right: Administering a tablet

Below: Drenching a sheep.

Proper equipment will make the job easier. Use a drenching syringe if drenching with a liquid. If one is not available, an ordinary soft drink bottle can be used. If a tablet or bolus is being given, a mouth spreader and a set of long handled forceps are useful. They are available from veterinary and livestock equipment suppliers, and are not expensive. A satisfactory implement to administer tablets can be improvised by using a 12 - 14 inch length of ½ inch rubber hose to hold the tablet. A wooden plunger is inserted in the hose to expel the tablet once it is in the sheep's mouth.

To treat the sheep, straddle it between your legs, and hold its neck between your knees. The rear quarters of the sheep should be placed in a corner against the wall so that it cannot sit down or swing sideways. The head of the sheep should not be held too high, in order to prevent the drench entering the windpipe with subsequent choking. The syringe or drenching instrument should be placed in the sheep's mouth back between the "grinders" and the drench administered, allowing the sheep to swallow it slowly.

If tablets are being administered, it is necessary to have an assistant hold the animal. The animal's mouth is opened, the mouth

spreader inserted so that the tongue is held forward underneath the lower bar of the spreader. A satisfactory mouth spreader has a spread of about 2½ inches. The tablet is then put in the sheep's mouth, past the "hump" of the tongue, with a set of forceps or a balling gun. The mouth spreader should then be quickly removed, and the sheep will swallow the tablet with ease.

Head Grubs of Sheep

These parasites are also known as sheep botflies and sheep gadflies. The adult flies, related to the warble flies of cattle, are active during the summer months. They deposit tiny larvae or grubs in the nostrils of sheep. These grubs crawl up into the sinuses of the head where they feed and develop. Except in severe infestations the grubs cause little trouble other than a discharge from the nose. The main loss from this parasite is the worry caused to the flock by the flies, which prevent the sheep from feeding and thriving while on pasture.

Destruction of the grubs in the head is very difficult, but some relief from attacks by the flies can be given the flock in the summer by providing them with some form of darkened shelter. Smearing the noses of the sheep with pine tar will act as a repellent against the flies and give some protection.

EXTERNAL PARASITES

Sheep Ticks (Sheep Keds)

The sheep ked, commonly referred to as sheep "tick" is a very common external parasite wherever sheep are raised in Manitoba. This insect sucks the sheep's blood and when present in large numbers can cause extensive loss. Infested sheep fail to feed properly with consequent unthriftiness. Ticks also cause damage to the fleece, such as soiling and breaking of the wool fibres.

Until recently, dipping was considered the best method to remove sheep ticks. Now spraying is more widely used and is a much better and easier method of control. The flock should be sprayed each spring, about 10 days to 2 weeks after they are shorn. Toxaphene is one of the most effective ingredients to use. The recommended concentration is 2 ounces of a 50% emulsifiable concentrate of toxaphene to each gallon of water. Toxaphene has a long residual effect and the sheep need be sprayed but once a year for good control of ticks. A knap-sack sprayer can be used to apply the insecticide to small flocks, but a larger type of sprayer is more satisfactory for large flocks.

If ticks are found on individuals in the flock, during the winter months, the sheep should be dusted with rotenone or DDT dust.

This treatment should be repeated in about three weeks time to destroy any ticks which hatch after the first dusting. Removing the ticks at this time is important, since they soon migrate from the old ewes to the lambs when they are born, causing irritation and distress to them.

Lice

Sheep are commonly infested with lice, which usually go unnoticed until the infestation becomes extensive and harmful. The heaviest infestations occur in the winter when animals are closely confined. Both sucking and biting lice are found on sheep. The damage done by these pests is confined largely to the wool, although in severe infestations, the irritation to the sheep will cause general unthriftiness. The attempts made by the infested sheep to relieve the irritation caused by lice results in injury to the fleece. The wool becomes soiled, matted and broken by the rubbing, scratching and biting done by the infested animals. Lice are readily controlled by the same methods as used in sheep tick control.

Sheep scab

This condition is caused by mites. These parasites cause intense irritation to infected animals, resulting in loss of flesh. The mites make skin punctures and live on the blood serum that oozes from the wounds. The exudate from the skin lesions, becomes mixed with debris, which dries, hardens, and forms a crust or scab. The wool falls out and leaves bare areas, which are covered with a scaly, grayish crust. All suspected cases should be reported immediately to the local veterinarian or representative of the Health of Animals Branch of the Canada Department of Agriculture, since it is a reportable disease and its treatment supervised by federal veterinarians.

Maggots

Sheep are sometimes troubled with infestations of maggots which are the larval stage of various species of flies. The adult flies are especially attracted to open wounds, such as those left from the docking and castration of young lambs, where they deposit their eggs or living young. The rear quarters of undocked lambs are also very frequently infested with maggots, because these regions are usually covered with manure and dirt, making an ideal breeding ground for these particular pests. The maggots work their way into the flesh, producing extensive damage and eventual death of the infected animal, if the conditions are allowed to progress.

The wool should be clipped away from the infested area, as many as possible of the maggots removed, and disinfectant applied

to the wound. Solutions of creolin, lysol, or other suitable disinfectants are quite satisfactory. Pine tar may be applied to repel the flies which would cause subsequent reinfestation.

Maggot infestation or 'fly strike" as it is commonly called, can be largely prevented by having the lambs docked, so that their rear quarters are less likely to become covered with filth. Docking and castration, should be done early in the spring before the adult flies become active.

SOME COMMON AILMENTS OF SHEEP

Profitable sheep production depends very largely upon preventing losses from diseases. Most diseases can be prevented. Good feeding, management, parasite control and sanitation practices are basic requirements. The following discussion of some of the more common diseases of sheep has been included as a guide to disease prevention and the maintenance of healthy flocks. When disease does occur, take immediate steps to protect uninfected animals, by isolating the sick from the remainder of the flock. Then consult your local veterinarian. Careful diagnosis and treatment are very important. Sick animals may also be sent or taken for examination to the Provincial Veterinary Laboratory, Manitoba Department of Agriculture and Conservation, located on the campus of the University of Manitoba, where diagnosis of the ailment and advice concerning treatment and future preventative measures will be given.

Foot Rot

This can be a serious condition and is caused by an infection resulting in the decay of the tissues just beneath the horn of the sheep's hoof. The first symptons are at the bulb of the heel and between the toes. Later the disease extends under the sole. The horn of the hoof becomes loosened and results in severe lameness. Treatment consists of cleaning the hoof, then trimming and paring it down to the diseased tissue. Affected feet may be dipped in a 5% formalin solution or a 30% copper sulphate solution for two minutes. If a large number of sheep are to be treated, they may be walked through a foot bath containing several inches of the copper sulphate soultion. One pound of copper sulphate mixed in each gallon of water gives good results. The whole flock should be treated to prevent further outbreaks, then moved to clean dry pastures. Sheep should be kept out of infected corrals and pastures for a period of two weeks to a month.

A 10% solution of chloromycetin in methyl or propylene alcohol is also very effective in treating infected individual sheep. This solution is painted on the diseased foot after it has been trimmed. Although wet muddy ground does not in itself cause foot rot, it

does facilitate the development and spread of the disease. Therefore, avoid pasturing sheep on this type of terrain.

Bloat

In this condition, the animal's paunch or rumen swells from gas formed during digestion. It is commonly encountered when animals are fed on rich, succulent green pastures, especially when wet with rain or dew. Overeating of many feeds may also cause bloat. Drenching the affected animal with six ounces of raw linseed oil to which one tablespoon of turpentine has been added will very often bring relief. If the distension with gas is extreme, the paunch may be tapped with a trocar and canula. This is done on the left side at a point midway between the last rib and the hip bone and the same distance down from the backbone.

Sore Mouth (Contagious Ecthyme)

Sore mouth, or contagious ecthyma, is a highly contagious disease, caused by a virus, and is most prevalent among feeder lambs shortly after their arrival in the feed lot. However, the disease also occurs frequently in small farm flocks. The disease first appears as reddened and swollen lips. Later blisters or pustules form which rupture, leaving open bleeding sores. In most cases the disease will run its course in a matter of three to four weeks and the sores and scabs will heal and drop off. The disease rarely causes death unless secondary infections invade the open ulcerations. The greatest loss results from the animal's inability to eat properly with consequent loss of condition and stunting of growth. The disease may be prevented by vaccination and should be carried out in flocks where the condition has been prevalent. There is no effective treatment for animals suffering from the condition, but some form of disinfectant should be applied to the sores to prevent secondary infections. Animals that recover from sore mouth are usually immune from reinfection for two years.

Enterotoxemia (Overeating Disease, Pulpy-Kidney Disease)

Enterotoxemia is a highly toxic and usually fatal disease of sheep caused by bacteria. It is most commonly encountered in over feeding of feedlot lambs, but sheep of all ages have been reported dying from this disease. Sheep on lush pasture, feedlot lambs on heavy grain rations and young lambs nursing on heavy milking ewes are those most generally affected. The disease develops rapidly and very often the affected animal will die suddenly without any previous signs of sickness. The mortality rate of diseased animals is nearly 100 percent and death will usually occur within 8 hours from the time the first symptoms are noted. The most frequent symptoms are diarrhea, listlessness, staggering, convulsive

seizure and coma. The disease may be easily mistakenly diagnosed and for this reason a veterinarian should be called immediately so that an accurate diagnosis can be made. Overfeeding or suddenly changing the feed should be avoided. Inoculation of healthy animals with Clostridium Perfringens Type D Bacterin is very effective in preventing the disease. Lambs two months of age or less should not be treated. Protection to the lambs before this age may be provided by inoculating the pregnant ewes about 1 month before lambing with two doses administered a week apart. This creates a strong resistance in the ewe which on transmision to the lamb is sufficient to last to the age of two months. Inoculation at the age of two months will give the lambs protection for at least 5 to 6 months. It takes about 10 days to 2 weeks for the bacterin to develop a protective immunity and in the case of feedlot lambs it should be administered 10 - 14 days before lambs are placed on full feed.

Stiff Lamb Disease (White Muscle Disease)

This is a disease marked by a degeneration of the muscle tissue and apparently is caused by a deficiency or improper body use of Vitamin E and/or phosphorous. The disease usually occurs in 2 to 10 week old lambs, with effects seen most often in lambs of 3 to 4 weeks of age. Affected lambs at first show stiffness and slowness of movement. Gradually, the hind legs stiffen, and the lamb cannot get up without help. Later, all four limbs become paralyzed and the animal dies. A post-mortem examination will reveal whitish streaks in the muscle tissue of the affected limbs, hence the name white muscle disease.

The disease can be prevented in most cases by feeding Vitamin E to the lambs. Feeding this vitamin to the ewes does not help the lambs. For treatment, Vitamin E and mineral mixtures are used. Intramusclar injections of Vitamin E are often combined with the doses of the vitamin given by mouth. A teaspoonful of 10% phosphoric acid given daily for four days in milk has been a helpful treatment in some cases.

Tetanus (Lockjaw)

Tetanus, commonly called lockjaw, is a virulent disease caused by a specific bacteria, which is widely distributed in soil and manure. Deep punctured or lacerated wounds contaminated with foreign material or soil — such as may result from nail or splinter punctures are apt to produce the disease. In sheep, tetanus commonly follows such routine operations as docking, castrating, ear tagging or shearing.

First signs of tetanus in sheep are stiffness of limbs and difficulty in getting up. Muscular spasms occur during which the whole body becomes stiff and rigid, giving a characteristic "saw horse" appearance. The animal is unable to move its jaw and eating is therefore impossible. Death usually follows in from three days to a week.

Because the germ is always apt to be present, prevention begins with extreme cleanliness in all surgical operations. Prompt and proper attention should be given to all wounds. Tetanus has been observed to occur more frequently after castration or docking where rubber bands are used in place of surgical methods. On farms where tetanus has been frequently encounetred, it is advisable to vaccinate against the disease before such operations are performed. Treatment for tetanus is seldom satsifactory. Prevention is the only approach to be taken for its control.

Lamb Dysentery (Scours)

This condition may be due to several factors. However, scours in young lambs during the first 2 - 4 days after birth is nearly always caused by infection by one or more species of bacteria. Symptons are profuse grayish diarrhea, which is often tinged with blood; depression and weakness, and failure to nurse. Death will result in a short time if treatment is not given. This type of scours is essentially filth born. Cold, wet, stormy weather is conducive to the disease if the barns and lambing pens are filthy. Trimming the wool away from the udder of nursing ewes is recommended to prevent the lambs from contacting the infectious germs while nursing. This type of scouring can often be prevented by inoculating the the ewe before lambing, or lambs immediately after birth. Consult a veterinarian regarding the correct procedure. Once scours has set in, sulfa drugs and antibiotics often provide effective treatment.

In older lambs scouring is often caused by internal parasites and can be relieved by recommended parasitic control measures. Scouring in lambs can also be caused by a lack of Vitamin A in the ewe's ration during preganacy. Poor quality, weathered, non-legume hays are very low in Vitamin A. Adding fish liver oils to the grain will prevent the deficiency.

Hemorrhagic Septicemia (Pneumonia, Shipping Fever)

This is a very common disease of sheep, as it is with cattle and swine. Chilling, over-exposure, fatigue or any sudden change in feeding or management are conducive to the disease. Exposure connected with shearing and spraying or stress conditions incurred by shipping often favors the development of this infection. The causative bacteria are generally present in healthy animals, but only

cause illness when the animal's natural resistance is lowered. In the acute form of the disease the sheep have a listless, dejected appearance, lose appetite and breathe with considerable difficulty. They usually suffer from a high fever, and in some cases death occurs in a very short time. Chronic forms of the disease are manifested in sheep by frequent coughing, labored breathing and a purulent discharge from the eyes and nose.

Because exposure and chilling are so important in causing pneumonia, everything possible should be done to prevent these conditions. Provide warm sanitary lambing pens. Shear or spray the flock during warm weather, unless warm shelter is available for protection. Protective inoculation is advisable, especially if animals are to be shipped some distance. Injections of 5 c.c.'s of penicillin or a combination of antibiotics prior to shipment or other stress factors gives temporary protection. For a greater length of time protection can be provided for by the use of a mixed bacteria. Two injections at the dosage recommended by the manufacturer should be given with a 3 week interval between the two injections. Bacterins require about 10 days to 2 weeks to produce active immunity against the diseases and therefore should be given at least 10 days before danger to exposure. Bacterins are not recommended for use in exposed or infected flocks or for treatment of animals intended for immediate shipment.

Affected animals should be given dry, warm and comfortable housing, good bedding and be allowed to rest as an aid to recovery. Injections of sulfa drugs and antibiotics such as penicillin, aureomycin or streptomycin will give the best results in treating most sick animals. Treatment must be given as soon as signs of the disease are manifested.

Pregnancy Disease

Pregnancy disease, also known as ketosis or lambing paralysis is a highly fatal metabolic disorder of ewes. It occurs during the fourth or fifth (last) month of pregnancy and is generally thought to be caused by a lack of adequate carbohydrate in the diet. It occurs more freqently in ewes carrying twin or triplet lambs. Overfat ewes lacking in exercise during the winter months are often stricken.

An affected ewe may lag behind the flock, go off feed and appear nervous. The ears may twitch for short periods and the animal is easily frightened. Later, dullness and a staggering gait may develop; the ewe will fall and have difficulty in getting up. Blindness is a common symptom and many affected ewes grind their teeth in the later stages of the disease. Finally, the ewe falls, becomes unconscious and dies within a few days.

Treatment of the disease is seldom successful, although intravenous injections of calcium gluconate or a dextrose solution have been known to effect recovery, if administered when the ewes first become sick. If the affected ewes are still eating, sugar may be added to the ration in the form of molasses (¾ to 1½ lbs. per animal) or provided as a drench in more advanced cases. Workers in the British Isles have reported favorable results using glycerin in the treatment of this disease. Affected ewes may be drenched with 2 - 4 ounces of a solution containing equal parts of glycerin and water. If the treatment is administered early in the course of the disease (24 - 36 hours after the first signs of sickness) one dose of this solution often affects prompt recovery. Additional treatments are necessary in more advanced cases.

Pregnancy disease can be effectively prevented by good feeding and management. Ewes should be in good condition at breeding time and during pregnancy. Good feed is required to provide the recommended gain of 35 - 40 pounds in body weight of the ewe between breeding and lambing. Ewes should not be overfat; too much feed can be just as serious as not enough. Feed regularly and do not make sudden or unusual changes in feeding. Avoid reducing the feed supply during late pregnancy. Ample exercise, which may be induced by placing feeding troughs some distance from the sleeping area, and freedom from parasites help prevent the disease.

Mastitis

Like the corresponding disease in cattle, mastitis, also known as garget or "blue-bag" may be caused by a number of bacterial species in sheep. Contributing causes are bruises, shear cuts, or other injury to the udder.

The condition usually occurs well along in the lactation period and is often caused by injury to the udder by the rough treatment given the ewes by the lambs.

One or both halves of the udder become swollen, hot and painful. Within a short time, the gland begins to harden and in a few days the swelling may extend along the floor of the belly in front of the udder. There is little milk secretion and what there is will be thick, stringy and streaked with blood, or in some cases only a watery, yellowish fluid. If the disease is not arrested, the udder may abscess: the disease will rupture and heavy scar tissue forms, destroying the milk secretion tissues. In extreme cases the affected udder will slough off completely, ending the ewe's economic productive life. She should be culled from the flock.

Treatment has value and is quite effective when given at the first sign of the disease. Sulfa drug preparations given either orally

or by injection during the early stages will very often prevent the disease from progressing further. Consult a veterinarian for correct dosage, since over-doses of sulfa drugs can cause harm to an animal's kidneys. Penicillin combined with streptomycin, aureomycin or other antibiotic preparations, inserted into the affected udder, provides satisfactory treatment, if done early in the course of the disease.

Lump Jaw

Lump jaw is a condition occasionally encountered in individuals in a flock, and is caused by a fungus-type organism. The disease usually involves the bones of the head, particularly the lower jaw, or the soft tissue surrounding the lower jaw and the lymph nodes of the neck. A large lump or abscess apearing in the region of the lower jaw, often ruptures, discharging pus. Abrasions or lacerations in the mouth are believed to be the entry for infections causing the disease. Dry, harsh, rough feeds may cause injury to the mouth. Particles of hay or grain, especially the barbed awns of barley and bearded grasses often cause minor injury allowing the infective organism to enter the tissue. No method of immunization has been devised to protect against the disease. Veterinarians now use sulfa drugs, antibiotics, iodides and surgey to treat the disease. Reports indicate that stretomycin is effective in treating the condition.

Scrapie

Scrapie is a fatal disease of sheep, caused by a filterable virus. It is a chronic wasting disease characterized by an extended period of incubation, intense itchiness, progressive weakness and emaciation, and impaired gait. The course of the disease may extend over several months and invariably ends in death. All breeds of sheep are susceptible. The exact means of transmission of the disease from one sheep to another is unknown.

Symptoms of the disease are slow and only an experienced sheepman may be able to recognize the earliest symptoms. The sheep are nervous and more easily excited than usual. Slight tremors in the head and neck are observed. The animal becomes tense with excitement when it is moved and rapid muscular tremors, affecting particularly the thighs and flanks, are manifested. The head and neck are carried high and somewhat stiffly. The facial expression is staring and fixed and the ears frequently assume unnatural positions. Grinding of the teeth is common. The wool loses its lustre and becomes dry. The outstanding symptom is that the animal rubs against all immovable objects. At first it may be suspected that the animal is suffering from mites, lice or ticks. The itchiness and subsequent scratching usually begins in the regions of the rump, particularly around the tail head, and generally extends

over the sides, shoulders and neck. When an infected animal is scratched or rubbed, it will usually show a definite "scratch reflex" manifested by nibbling of the lips and tongue and often vigorous wagging of the dock. The itch becomes more intense, as the disease progresses resulting in the animal spending most of its time rubbing and scratching. The skin of the animal will show no evidence of any diseased condition, except the abrasions caused by the scratching. Some sheep will also bite and lick the skin on their legs and pull the wool with their mouths.

The temperature of the diseased animal usually remains normal, and the sheep's appetite remains good. However, the animal gradually loses weight, becomes weak and walks with an unsteady or staggering gait. It may fall after running a short distance and eventually it will be unable to stand. It will then lie on its side and make running movements with its feet. It will continue to eat in this position as long as feed is within its reach. The course of the disease varies in duration from 6 weeks to 6 months before the animal dies.

The number of animals actually infected in a flock is generally small and there may be only an occasional case over a period of several years. The disease usually has an extremely long and variable incubation period; seldom do animals under 18 months of age show symptoms. Animals as old as 10 years have been infected. It is also possible that some animals may harbor the infective agent and never show symptoms of the disease themselves.

There is no known treatment for scrapie. If the disease is suspected it should be reported immediately to the local veterinarian or to the nearest officer of the Health of Animals Division, Canada Department of Agriculture. All infected and exposed animals are slaughtered and compensation is paid for animals which are destroyed under this program.

A STITCH IN TIME SAVES NINE

JANUARY — FEBRUARY

1. Feed good quality hay.
2. See that ewes get plenty of exercise.
3. Treat sheep for internal parasites.
4. Provide minerals, free-choice, at all times.
5. "Crutch" out ewes before lambing time.
6. Dust to remove ticks and lice.
7. Provide plenty of good clean water.

MARCH — APRIL

1. Start feeding extra grain 6 weeks - 2 months before lambing.
2. Provide warm, dry lambing quarters.
3. Dock and castrate before lambs are 3 weeks old.
4. Creep-feed lambs.
5. Feed ewes liberally.

MAY — JUNE

1. Treat ewes for internal parasites after lambing and before pasturing if not done earlier in the winter.
2. Give flock best available pasture.
3. Vaccinate lambs against overeating disease if this is a problem.
4. Shear the flock.
5. Spray the entire flock with toxaphene to destroy ticks.

JULY — AUGUST

1. Dose all sheep including lambs for internal parasites.
2. Provide creep-feed for lambs.
3. Market fat lambs at 90 - 100 pounds.
4. Remove ram from the flock if early lambs are not desired.

SEPTEMBER — OCTOBER

1. Cull old ewes and poor producers, select best ewe lambs as replacements.
2. "Flush" ewes with good pasture or good hay and grain.
3. Trim dirty wool and tags away from the ewe's rear quarters and the underside of the ram before the breeding season.
4. Paint lampblack or red ochre on ram's breast to give check on breeding performance.

NOVEMBER — DECEMBER

1. Provide dry, well lighted and ventilated winter quarters, which are free from draughts.
2. Feed the flock generously.